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Agenda item 4

CONSERVATION OF BIOLOGICAL DIVERSITY

Text submitted by the Chairman on the basis of negotiations
held on conservation of biological diversity

(Section II, chapter 7, of Agenda 21)

BACKGROUND

The objectives and activities in this chapter of Agenda 21 are intended to improve the conservation of biological diversity and the sustainable use of biological resources, as well as to support the draft Convention on Biological Diversity. As negotiations are continuing on that instrument, these objectives and activities, where they relate directly to the draft Convention, are without prejudice to those negotiations.

INTRODUCTION

1. Our planet's essential goods and services depend on the variety and variability of genes, species, populations and ecosystems. Biological resources feed and clothe us and provide housing, medicines and spiritual nourishment. The natural ecosystems of forests, savannahs, pastures and rangelands, deserts, tundras, rivers, lakes and seas contain most of the Earth's biodiversity. Farmers' fields and gardens are also of great importance as repositories, while gene banks, botanical gardens, zoos and other germplasm repositories make a small but significant contribution. The current decline in biodiversity is largely the result of human activity and represents a serious threat to human development.

PROGRAMME AREA

Conservation of biological diversity

Basis for action

2. Despite mounting efforts over the past 20 years, the loss of the world's biological diversity, mainly from habitat destruction, over-harvesting, pollution and the inappropriate introduction of foreign plants and animals, has continued. Biological resources constitute a capital asset with great potential for yielding sustainable benefits. Urgent and decisive action is needed to conserve and maintain genes, species and ecosystems, with a view to the sustainable management and use of biological resources. Capacities for the assessment, study and systematic observation and evaluation of biodiversity need to be reinforced at national and international levels. Effective national action and international cooperation is required for the in situ protection of ecosystems, for the ex situ conservation of biological and genetic resources and for the enhancement of ecosystem functions. The participation and support of local communities are elements essential to the success of such an approach. Recent advances in biotechnology have pointed up the likely potential for agriculture, health and welfare, and environmental purposes of the genetic material contained in plants, animals and micro-organisms. At the same time, it is particularly important in this context to stress that States have the sovereign right to exploit their own biological resources pursuant to their environmental policies, as well as the responsibility to conserve their biodiversity and use their biological resources sustainably, and to ensure that activities within their jurisdiction or control do not cause damage to the biological diversity of other States or of areas beyond the limits of national jurisdiction.

3. Governments at the appropriate levels, with the cooperation of the relevant United Nations bodies and [where necessary] regional intergovernmental and non-governmental organizations, the private sector and financial institutions, and taking into consideration social and economic factors, should:

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(a) Press for the early entry into force of the Convention on Biological Diversity with the widest possible participation;

(b) Develop national strategies for the conservation of biological diversity and the sustainable use of biological resources;

(c) Integrate strategies for the conservation of biological diversity and the sustainable use of biological resources into national development strategies and/or plans;

(d) Take appropriate measures for the [fair and equitable] sharing of benefits derived from research and development and use, including by biotechnology, of biological and genetic resources between the sources of those resources and those who use them;

(e) Carry out country studies, as appropriate, on the conservation of biological diversity and the sustainable use of biological resources, including analyses of relevant costs and benefits and with particular reference to socio-economic aspects;

(f) Produce regularly updated world reports on biodiversity based upon national assessments;

(g) Recognize and foster the traditional methods and the knowledge of indigenous people and their communities, emphasizing the particular role of women, relevant to the conservation of biological diversity and the sustainable use of biological resources, and ensure the opportunity for the participation of those groups in the economic and commercial benefits derived from the use of such traditional methods and knowledge;

(h) Implement mechanisms for the improvement, generation, development and sustainable use of biotechnology and its safe transfer, particularly to developing countries, taking account of the potential contribution of biotechnology to the conservation of biological diversity and the sustainable use of biological resources;

(i) Promote broader international and regional cooperation in furthering scientific and economic understanding of the importance of biodiversity and its functions in ecosystems;

(j) [Develop measures and arrangements to implement the rights of countries of origin - areas of origin and/or natural diversification - of genetic resources, particularly developing countries, to benefit from the biotechnological development and the commercial utilization of products derived from such resources.]

Activities

(a) Management-related activities

4. Governments at the appropriate levels, consistent with national policies and practices, with the cooperation of the relevant United Nations bodies and, as appropriate, intergovernmental organizations and, where necessary, with the support of indigenous people and their communities, non-governmental organizations and other groups, including the business and scientific communities, and consistent with the requirements of international law, should, as appropriate:

(a) Develop new or strengthen existing strategies, plans or programmes of action for the conservation of biological diversity and the sustainable use of biological resources, taking account of education and training needs;

(b) Integrate strategies for the conservation of biological diversity and the sustainable use of biological and genetic resources into relevant sectoral or cross-sectoral plans, programmes and policies, with particular reference to the special importance of terrestrial and aquatic biological and genetic resources for food and agriculture; 1/

(c) Undertake country studies or other methods to identify components of biological diversity important for its conservation and for the sustainable use of biological resources, ascribe values to biological and genetic resources, identify processes and activities with significant impacts upon biological diversity, evaluate the potential economic implications of the conservation of biological diversity and the sustainable use of biological and genetic resources, and suggest priority action;

(d) Take effective economic, social and other appropriate incentive measures to encourage the conservation of biological diversity and the sustainable use of biological resources, including the promotion of sustainable production systems, such as traditional methods of agriculture, agroforestry, forestry, range and wildlife management, which use, maintain or increase biodiversity;

(e) Subject to national legislation, take action to respect, record, protect and promote the wider application of the knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles for the conservation of biological diversity and the sustainable use of biological resources, with a view to the [fair and equitable] sharing of the benefits arising, and promote mechanisms to involve those communities, including women, in the conservation and management of ecosystems;

(f) Undertake long-term research into the importance of biodiversity for the functioning of ecosystems and the role of ecosystems in producing goods, environmental services and other values supporting sustainable development, with particular reference to the biology and reproductive capacities of key terrestrial and aquatic species, including native, cultivated and cultured

species; new observation and inventory techniques; ecological conditions necessary for biodiversity conservation and continued evolution; and social behaviour and nutrition habits dependent on natural ecosystems, where women play key roles. The work should be undertaken with the widest possible participation, especially of indigenous and local communities, including women;

(g) Take action where necessary for the conservation of biological diversity through the in situ conservation of ecosystems and natural habitats, as well as primitive cultivars and their wild relatives, and the maintenance and recovery of viable populations of species in their natural surroundings, and implement ex situ measures, preferably in the source country. In situ measures should include the reinforcement of terrestrial, marine and aquatic protected area systems to embrace, inter alia, vulnerable freshwater and other wetlands, and coastal ecosystems, such as estuaries, coral reefs and mangroves;

(h) Promote the rehabilitation and restoration of damaged ecosystems and the recovery of threatened and endangered species;

(i) Develop policies to encourage the conservation of biodiversity and the sustainable use of biological and genetic resources on private lands;

(j) Promote environmentally sound and sustainable development in areas adjacent to protected areas with a view to furthering protection of these areas;

(k) Introduce appropriate environmental impact assessment procedures for proposed projects likely to have significant impacts upon biological diversity, providing for suitable information to be made widely available and for public participation, where appropriate; furthermore, encourage the assessment of the impacts of relevant policies and programmes on biological diversity;

(l) Promote, where appropriate, the establishment and strengthening of [national registration], regulation or management and control systems at the appropriate level related to biological resources;

(m) Take measures to encourage a greater understanding and appreciation of the value of biological diversity, as manifested both in its component parts and in the ecosystem services provided.

(b) Data and information

5. Governments at the appropriate levels, consistent with national policies and practices, with the cooperation of the relevant United Nations bodies and, as appropriate, intergovernmental organizations and [, where necessary,] with the support of indigenous people and their communities, non-governmental organizations and other groups, including the business and scientific communities, and consistent with the requirements of international law, should, as appropriate:

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(a) Regularly collate, evaluate and exchange information on the conservation of biological diversity and the sustainable use of biological resources;

(b) Develop methodologies with a view to undertaking systematic sampling and evaluation on a national basis of the components of biological diversity identified by means of country studies;

(c) Initiate or further develop methodologies and begin or continue work on surveys at the appropriate level on the status of ecosystems and establish baseline information on biological and genetic resources, including those in terrestrial, aquatic, coastal and marine ecosystems, as well as inventories undertaken with the participation of local and indigenous communities;

(d) Identify and evaluate the potential economic and social implications and benefits of the conservation and sustainable use of terrestrial and aquatic species in each country, building upon the results of country studies;

(e) Undertake the updating, analysis and interpretation of data derived from the identification, sampling and evaluation activities described above;

(f) Collect, assess and make available relevant and reliable information in a timely manner and in a form suitable for decision-making at all levels, with the full support and participation of local and indigenous communities.

(c) International and regional cooperation and coordination

6. Governments at the appropriate levels, with the cooperation of the relevant United Nations bodies and, as appropriate, intergovernmental organizations, and [, where necessary,] with the support of indigenous people and their communities, non-governmental organizations and other groups, including the business and scientific communities, and consistent with the requirements of international law, should, as appropriate:

(a) Consider the establishment or strengthening of national or international capabilities and networks for the exchange of data and information of relevance to the conservation of biological diversity and the sustainable use of biological and genetic resources;

(b) Undertake the production of regularly updated world reports on biodiversity based upon national assessments in all countries;

(c) Promote technical and scientific cooperation in the field of conservation of biological diversity and the sustainable use of biological and genetic resources. Special attention should be given to the development and strengthening of national capabilities by means of human resource development and institution-building, including the transfer of technology and/or development of research and management facilities, such as herbaria, museums, gene banks, and laboratories, related to the conservation of biodiversity;

(d) [Provide and/or facilitate the transfer of and cooperation on technologies relevant to the conservation of biological diversity and the sustainable use of biological resources or that make use of genetic resources and cause no significant damage to the environment, recognizing that technology includes biotechnology;] 1/

(e) Promote cooperation between the parties to relevant international conventions and action plans with the aim of strengthening and coordinating efforts to conserve biological diversity and the sustainable use of biological resources;

(f) Strengthen support for international and regional instruments, programmes and action plans concerned with the conservation of biological diversity and the sustainable use of biological resources;

(g) Promote improved international coordination of measures for the effective conservation and management of endangered/non-pest migratory species, including appropriate levels of support for the establishment and management of protected areas in transboundary locations;

(h) Promote national efforts with respect to surveys, data collection, sampling and evaluation, and the maintenance of gene banks.

Means of implementation

(a) Financing and cost-evaluation

7. [The estimated average annual cost of the programme area in this chapter during the period 1993-2000 is expected to be about \$5 billion. The estimated average annual cost of strengthening international organizations to assist countries to conduct programmes is expected to be about \$30 million. Pending the outcome of the work of the Intergovernmental Negotiating Committee for a Convention on Biological Diversity, these estimated costs have been arbitrarily divided equally between national Governments - supported as appropriate by non-governmental organizations, local communities and others - and the international community.]

(b) Scientific and technological means

8. Specific aspects to be addressed include the need to develop:

(a) Efficient methodologies for baseline surveys and inventories, as well as for the systematic sampling and evaluation of biological resources;

(b) Methods and technologies for the conservation of biological diversity and the sustainable use of biological resources;

(c) Improved and diversified methods for ex situ conservation with a view to the long-term conservation of genetic resources of importance for research and development.

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(c) Human resource development

9. There is a need, where appropriate, to:

(a) Increase the number and/or make more efficient use of trained personnel in scientific and technological fields relevant to the conservation of biological diversity and the sustainable use of biological resources;

(b) Maintain or establish programmes for scientific and technical education and training of managers and professionals, especially in developing countries, on measures for the identification, conservation of biological diversity and the sustainable use of biological resources;

(c) Promote and encourage understanding of the importance of the measures required for the conservation of biological diversity and the sustainable use of biological resources at all policy-making and decision-making levels in Governments, business enterprises and lending institutions, and promote and encourage the inclusion of these topics in educational programmes.

(d) Capacity-building

10. There is a need, where appropriate, to:

(a) Strengthen existing institutions and/or establish new ones responsible for the conservation of biological diversity and to consider the development of mechanisms such as national biodiversity institutes or centres;

(b) Continue to build capacity for the conservation of biological diversity and the sustainable use of biological resources in all relevant sectors;

(c) Build capacity, especially within Governments, business enterprises and bilateral and multilateral development agencies, for integrating biodiversity concerns, potential benefits, and opportunity cost calculations into project design, implementation and evaluation processes, as well as for evaluating the impact on biological diversity of proposed development projects;

(d) Enhance the capacity of governmental and private institutions, at the appropriate level, responsible for protected area planning and management to undertake intersectoral coordination and planning with other governmental institutions, non-governmental organizations and, where appropriate, indigenous communities.

Notes

1/ Appropriate cross-references to other parts of Agenda 21 will be inserted later.



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ENVIRONMENTALLY SOUND MANAGEMENT OF BIOTECHNOLOGY

Text submitted by the Chairman on the basis of negotiations
held on document A/CONF.151/PC/100/Add.27

(Section II, chapter 8, of Agenda 21)

INTRODUCTION

1. Biotechnology is the integration of the new techniques emerging from modern biotechnology with the well-established approaches of traditional biotechnology. Biotechnology, an emerging knowledge-intensive field, is a set of enabling techniques for bringing about specific man-made changes in deoxyribonucleic acid (DNA), or genetic material, in plants, animals and microbial systems leading to useful products and technologies. By itself biotechnology cannot resolve all the fundamental problems of environment and development, so expectation needs to be tempered by realism. Nevertheless, it promises to make a significant contribution in enabling the development of, for example, better health care, enhanced food security through sustainable agricultural practices, improved supplies of potable water, more efficient industrial development processes for transforming raw materials, support for sustainable methods of afforestation and reforestation, and detoxification of hazardous wastes. Biotechnology also offers new opportunities for global partnerships, especially between the countries rich in biological resources (which include genetic resources) but lacking the expertise and investments needed to apply such resources through biotechnology and the countries that have developed the technological expertise to transform biological resources so that they serve the needs of sustainable development. Biotechnology can assist in the conservation of those resources through, for example, ex situ

techniques. The programme areas set out below seek to foster internationally agreed principles to be applied to ensure the environmentally sound management of biotechnology, to engender public trust and confidence, to promote the development of sustainable applications of biotechnology and to establish appropriate enabling mechanisms, especially within developing countries, through the following activities:

- (a) Increasing availability of food, feed and renewable raw materials;
- (b) Improving human health;
- (c) Enhancing protection of the environment;
- (d) Enhancing safety and developing international mechanisms for cooperation;
- (e) Establishing enabling mechanisms for the environmentally sound application of biotechnology.

PROGRAMME AREAS

A. Increasing the availability of food, feed and renewable raw materials

Basis for action

2. To meet the growing consumption needs of the global population, the challenge is not only to increase food supply, but also to improve food distribution significantly while simultaneously developing more sustainable agricultural systems. Much of this increased productivity will need to take place in developing countries. It will require the successful and environmentally safe application of biotechnology in agriculture, in the environment and in human health care. Most of the investment in modern biotechnology has been in the industrialized world. Significant new investments and human resource development will be required in biotechnology, especially in the developing world.

Objectives

3. The following objectives are proposed, keeping in mind the need to promote the use of appropriate safety measures based on programme area D:

- (a) To increase to the maximum possible extent the yield of major crops, livestock, and aquaculture species, by using the combined resources of modern biotechnology and conventional plant/animal/micro-organism improvement, including the more diverse use of genetic material resources, both hybrid and original. Forest product yields should similarly be increased, to ensure the sustainable use of forests;

(b) To reduce the need for volume increases of food, feed and raw materials by improving the nutritional value (composition) of the source crops, animals and micro-organisms, and to reduce post-harvest losses of plant and animal products;

(c) To increase the use of integrated pest, disease and crop management techniques to eliminate overdependence on agrochemicals, thereby encouraging environmentally sustainable agricultural practices;

(d) To evaluate the agricultural potential of marginal lands in comparison with other potential uses, for example, in forestry and conservation, and in those areas where agricultural use is desirable, to develop systems allowing for substantial and sustainable productivity increases;

(e) To expand the applications of biotechnology in forestry, both for increasing yields and more efficient utilization of forest products and for improving afforestation and reforestation techniques. Efforts should be concentrated on species and products that are grown in and are of value for developing and other countries;

(f) To increase the efficiency of nitrogen fixation and mineral absorption by the symbiosis of higher plants with micro-organisms;

(g) To improve capabilities in basic and applied sciences and in the management of complex interdisciplinary research projects.

Activities

(a) Management related

4. Governments at the appropriate level, with the assistance of international and regional organizations and [,where necessary,] with the support of non-governmental organizations, the private sector, academic and scientific institutions and the pharmaceutical industry, should improve both plant and animal breeding and micro-organisms through the use of traditional and modern biotechnologies, to enhance sustainable agricultural output to achieve food security, particularly in developing countries, with due regard to the prior identification of desired characteristics before modification, taking into account the needs of farmers, the socio-economic, cultural and environmental impacts of modifications and the need to promote sustainable social and economic development and paying particular attention to how the use of biotechnology will impact on the maintenance of environmental integrity.

5. More specifically, these entities should:

(a) Improve productivity, nutritional quality and shelf-life of food and animal feed products, with efforts including work on pre- and post-harvest losses;

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- (b) Further develop resistance to diseases and pests;
- (c) Develop plant cultivars tolerant and/or resistant to stress from factors such as pests and diseases and from abiotic causes;
- (d) Promote the use of underutilized crops of possible future importance for human nutrition and industrial supply of raw materials;
- (e) Increase the efficiency of symbiotic processes that assist sustainable agricultural production;
- (f) Facilitate the conservation and safe exchange of plant, animal and microbial germ plasm by applying risk assessment and management procedures, including improved diagnostic techniques for detection of pests and diseases by better methods of rapid propagation;
- (g) Develop improved diagnostic techniques and vaccines for the prevention and spread of diseases and for rapid assessment of toxins or infectious organisms in products for human use or livestock feed;
- (h) Identify more productive strains of fast-growing trees, especially for fuel wood, and develop rapid propagation methods to aid their wider dissemination and use;
- (i) Evaluate the use of various biotechnology techniques to improve the yields of fish, algal and other aquatic species;
- (j) Promote sustainable agricultural output by strengthening and broadening the capacity and scope of existing research centres to achieve the necessary critical mass through encouragement and monitoring of research into the development of biological products and processes of productive and environmental value that are economically and socially feasible, while taking safety considerations into account;
- (k) Promote the integration of appropriate and traditional biotechnologies for the purposes of cultivating genetically modified plants, rearing healthy animals and protecting forest genetic resources;
- (l) Develop processes to increase the availability of materials derived from biotechnology for use in food, feed, and renewable raw materials production.

(b) Data and information

6. The following activities should be undertaken:

- (a) Consideration of comparative assessments of the potential of the different technologies for food production, together with a system for assessing the possible effects of biotechnologies on international trade in agricultural products;

/...

(b) Examination of the implications of the withdrawal of subsidies and the possible use of other economic instruments to reflect the environmental costs associated with the unsustainable use of agrochemicals;

(c) Maintenance and development of data banks of information on environmental and health impacts of organisms to facilitate risk assessment;

(d) Acceleration of technology acquisition, transfer and adaptation by developing countries to support national activities that promote food security.

(c) International and regional cooperation and coordination

7. Governments at the appropriate level, with the support of relevant international and regional organizations, should promote the following activities in conformity with international agreements or arrangements on biological diversity as appropriate:

(a) Cooperation on issues related to conservation of, access to, and exchange of germ plasm; rights associated with intellectual property and informal innovations including farmers' and breeders' rights; access to the benefits of biotechnology; and bio-safety;

(b) Promotion of collaborative research programmes, especially in developing countries, to support activities outlined in this programme area, with particular reference to cooperation with local and indigenous communities in the conservation of biological diversity and sustainable use of biological resources, as well as the fostering of traditional methods and knowledge of such groups in connection with these activities;

(c) Acceleration of technology acquisition, transfer and adaptation by developing countries to support national activities that promote food security, through the development of systems for substantial and sustainable productivity increases that do not damage or endanger local ecosystems;

(d) Develop appropriate safety procedures based on programme area D, taking account of ethical considerations.

Means of implementation

(a) Financing and cost evaluation

8. [The estimated average annual cost of this programme area for the period 1993-2000 could be upwards of \$5 billion, of which it is estimated that about \$50 million would come from international financing sources. Most of the amount for this programme area is included in the cost evaluation of other chapters. Both the total amount and the proportion of global investments currently being made by developing countries in biotechnology research and development need to be increased significantly over the period 1993-2000 and beyond to enable them to take advantage of the increasing opportunities offered by biotechnology for accelerated development.]

(b) Scientific and technological means

9. See paragraphs 6 and 7 above.

(c) Human resource development

10. Training of competent professionals in the basic and applied sciences at all levels (including scientific personnel, technical staff and extension workers) is one of the most essential components of any programme of this kind. Creating awareness of the benefits and risks of biotechnology is essential. Given the importance of good management of research resources for the successful completion of large multidisciplinary projects, continuing programmes of formal training for scientists should include managerial training. Training programmes should also be developed, within the context of specific projects, to meet regional or national needs for comprehensively trained personnel capable of using advanced technology to reduce the "brain drain" from developing to developed countries. Emphasis should be given to encouraging collaboration between and training of scientists, extension workers and users to produce integrated systems. Additionally, special consideration should be given to the execution of programmes for training and exchange of knowledge on traditional biotechnologies and for training on safety procedures.

(d) Capacity-building

11. [Institutional upgrading or other appropriate measures will be needed to build up technical, managerial, planning and administrative capacities at the national level to support the activities in this programme area. Such measures should be backed up by international, scientific, technical and financial assistance adequate to facilitate technical cooperation and raise the capacities of the developing countries. Programme area E contains further details.]

B. Improving human health

Basis for action

12. The improvement of human health is one of the most important objectives of development. The deterioration of environmental quality, notably air, water and soil pollution due to toxic chemicals, hazardous wastes, radiation and other sources, is a matter of growing concern. This degradation of the environment resulting from inadequate or inappropriate development has a direct negative effect on human health. Malnutrition, poverty, poor human settlements, lack of good-quality potable water and inadequate sanitation facilities add to the problems of communicable and non-communicable diseases. As a consequence, the health and well-being of people are exposed to increasing pressures.

Objectives

13. The main objective of this programme area is to contribute, through the environmentally sound application of biotechnology to an overall health programme, to:

- (a) Reinforcing or inaugurating (as a matter of urgency) programmes to help combat major communicable diseases;
- (b) Promoting good general health among people of all ages;
- (c) Developing and improving programmes to assist in specific treatment of and protection from major non-communicable diseases;
- (d) Developing and strengthening appropriate safety procedures based on programme area D, taking account of ethical considerations;
- (e) Creating enhancing capabilities for carrying out basic and applied research and for managing interdisciplinary research.

Activities

(a) Management-related activities

14. Governments at the appropriate level, with the assistance of international and regional organizations, academic and scientific institutions, and the pharmaceutical industry, should:

- (a) Develop national and international programmes for identifying and targeting those populations of the world most in need of improvement in general health and protection from diseases;
- (b) Develop criteria for evaluating the effectiveness and the benefits and risks of the proposed activities;
- (c) Establish and enforce screening, systematic sampling and evaluation procedures for drugs and medical technologies with a view to barring the use of those which are unsafe drugs for the purposes of experimentation; [ensure that new fertility-related mechanisms and agents are safe and effective and that they do not threaten human health;]
- (d) Improve, systematically sample and evaluate drinking-water quality by introducing appropriate specific measures, including diagnosis of water-borne pathogens and pollutants;
- (e) Develop and make widely available new and improved vaccines against major communicable diseases that are efficient and safe and offer protection with a minimum number of doses, including the vaccines needed to combat common diseases of children;

(f) Develop biodegradable delivery systems for vaccines that eliminate the need for present multiple-dose schedules, facilitate better coverage of the population and reduce the costs of immunization;

(g) Intensify efforts to develop a multicomponent vaccine conferring protection against common diseases of children;

(h) Develop effective biological control agents against disease-transmitting vectors, such as mosquitoes and resistant variants, taking account of environmental protection considerations;

(i) Develop new diagnostics based on, for example, monoclonal antibodies and DNA probes to enable early detection of communicable, non-communicable and genetic disorders;

(j) Develop and facilitate the therapeutic use of recombinant hormones, produced using recombinant DNA technology;

(k) Develop new drugs for resistant organisms and for metabolic disorders;

(l) Develop improved delivery systems for the administration of therapeutics and prophylaxis;

(m) Develop safe and effective methods for the treatment of genetic disorders;

(n) Develop the improvement and more effective utilization of medicinal plants and other related sources;

(o) Develop processes to increase the availability of materials derived from biotechnology, for use in improving human health.

(b) Data and information

15. The following activities should be undertaken:

(a) Research to assess the comparative social, environmental and financial costs and benefits of different technologies for basic and reproductive health care within a framework of universal safety and ethical considerations;

(b) Development of public education programmes directed at decision makers and the general public to encourage awareness and understanding of the relative benefits and risks of modern biotechnology, according to ethical and cultural considerations.

(c) International and regional cooperation and coordination

16. Governments at the appropriate levels, with the support of relevant international and regional organizations, should:

(a) Develop and strengthen appropriate safety procedures based on programme area D, taking account of ethical considerations;

(b) Support the development of national programmes, particularly in developing countries, for improvements in general health, especially protection from major communicable diseases, common diseases of children and disease-transmitting factors.

Means of implementation

17. [To achieve the above goals, the activities need to be implemented with urgency if progress towards the control of major communicable diseases is to be achieved by the beginning of the next century. The spread of some diseases to all regions of the world calls for global measures. For more localized diseases, regional or national policies will be more appropriate. The achievement of goals calls for:

(a) Continuous international commitment;

(b) National priorities with a defined time-frame;

(c) Scientific and financial input at global and national levels.]

(a) Financing and cost evaluation

18. [The estimated average annual cost of this programme area could be upwards of \$14 billion, of which it is estimated that about \$130 million would come from international financing sources.]

(b) Scientific and technological means

19. Well-coordinated multidisciplinary efforts involving cooperation between scientists, financial institutions and industries will be required. At the global level, this may mean collaboration between research institutions in different countries, with funding at the intergovernmental level, possibly supported by similar collaboration at the national level. Research and development support will also need to be strengthened, together with the mechanisms for providing the transfer of relevant technology.

(c) Human resource development

20. Training and technology transfer is needed at the global level, with regions and countries having access to, and participation in exchange of, information and expertise, particularly indigenous or traditional knowledge and related biotechnology. It is essential to create/enhance endogenous

capabilities in developing countries to actively participate in the processes of production in biotechnology. The training of personnel could be undertaken at three levels:

- (a) That of scientists required for basic and product-oriented research;
- (b) That of health personnel (to be trained in the safe use of new products) and of science managers required for complex intermultidisciplinary research;
- (c) That of tertiary-level technical workers required for delivery in the field.
- (d) Capacity-building

21. See programme area E.

C. Enhancing protection of the environment

Basis for action

22. Environmental protection is an integral component of sustainable development. The environment is threatened in all its biotic and abiotic components: animals, plants, microbes and ecosystems comprising biological diversity; water, oil and air, which form the physical components of habitats and ecosystems; and all the interactions between the components of biodiversity and their sustaining habitats and ecosystems. With the continued increase in the use of chemicals, energy and non-renewable resources by an expanding global population, associated environmental problems will also increase. Despite increasing efforts to prevent waste accumulation and to promote recycling, the amount of environmental damage caused by overconsumption, the quantities of waste generated and the degree of unsustainable land use appear likely to continue growing.

23. The need for a diverse genetic pool of plant, animal and microbial germ plasm for sustainable development is well established. Biotechnology is one of many tools that can play an important role in supporting the rehabilitation of degraded ecosystems and landscapes. This may be done through the development of new techniques for reforestation and afforestation, germ plasm conservation, and cultivation of new plant varieties. Biotechnology can also contribute to the study of the effects exerted on the remaining organisms and on other organisms by organisms introduced into ecosystems.

Objectives

24. The aim of this programme is to prevent, halt and reverse environmental degradation through the appropriate use of biotechnology in conjunction with other technologies, while supporting safety procedures as an integral

component of the programme. Specific objectives include the inauguration as soon as possible of specific programmes with specific targets to:

- (a) Adopt production processes making optimal use of natural resources, by recycling biomass, recovering energy and minimizing waste generation;
- (b) Promote the use of biotechnologies, with emphasis on bio-remediation of land and water, waste treatment, soil conservation, reforestation, afforestation and land rehabilitation;
- (c) Apply biotechnologies and their products to protect environmental integrity with a view to long-term ecological security.

Activities

(a) Management related

25. Governments at the appropriate level and, where necessary, with the assistance of international and regional organizations, the private sector, non-governmental organizations and academic and scientific institutions should:

- (a) Develop environmentally sound alternatives and improvements for environmentally damaging production processes;
- (b) Develop applications to minimize the requirement for unsustainable synthetic chemical input and to maximize the use of environmentally appropriate products, including natural products (see programme area A);
- (c) Develop processes to reduce waste generation, treat waste before disposal and make use of biodegradable materials;
- (d) Develop processes to recover energy and provide renewable energy sources, animal feed and raw materials from recycling organic waste and biomass;
- (e) Develop processes to remove pollutants from the environment, including accidental oil spills, where conventional techniques are not available or are expensive, inefficient, or inadequate;
- (f) Develop processes to increase the availability of planting materials, particularly indigenous varieties, for use in afforestation and reforestation and to improve sustainable yields from forests;
- (g) Develop applications to increase the availability of stress-tolerant planting material for land rehabilitation and soil conservation;
- (h) Promote the use of integrated pest management based on the judicious use of bio-control agents;

(i) Promote the appropriate use of bio-fertilizers within national fertilizer programmes;

(j) Promote the use of biotechnologies relevant to the conservation and scientific study of biological diversity and the sustainable use of biological resources;

(k) Develop easily applicable technologies for the treatment of sewage and organic waste;

(l) Develop new technologies for rapid screening of organisms for useful biological properties;

(m) Promote new biotechnologies for tapping mineral resources in an environmentally sustainable manner.

(b) Data and information

26. Steps should be taken to increase access both to existing information about biotechnology and to facilities based on global databases.

(c) International and regional cooperation and coordination

27. Governments at the appropriate level, with the support of relevant international and regional organizations, should:

(a) Strengthen research, training and development capabilities, particularly in developing countries, to support the activities outlined in this programme area;

(b) Develop mechanisms for scaling up and disseminating environmentally sound biotechnologies of high environmental importance, especially in the short term, even though those biotechnologies may have limited commercial potential;

(c) Enhance cooperation, including transfer of biotechnology, between participating countries for capacity-building;

(d) Develop appropriate safety procedures based on programme area D, taking account of ethical considerations.

Means of implementation

(a) Financing and cost evaluation

28. [The estimated average annual cost of this programme area could be upwards of \$1 billion, of which it is estimated that about \$10 million would come from international financing sources.]

(b) Scientific and technological means

29. See paragraphs 25-27 above.

(c) Human resource development

30. The activities for this programme area will increase the demand for trained personnel. Support for existing training programmes needs to be increased, for example, at the university and technical institute level, as well as the exchange of trained personnel between countries and regions. New and additional training programmes also need to be developed, for example, for technical and support personnel. There is also an urgent need to improve the level of understanding of biological principles and their policy implications among decision makers in Governments, and financial and other institutions.

Capacity-building

31. Relevant institutions will need to have the responsibility for undertaking, and the capacity (political, financial and manpower) to undertake, the above-mentioned activities and to be dynamic in response to new biotechnological developments (see programme area E).

D. Enhancing safety and developing international mechanisms for cooperation

Basis for action

32. [There is a need for internationally agreed principles and technical guidelines, which should build upon those already developed at the national levels. Only when adequate and transparent safety and border-control procedures are in place, will the community at large be able to derive maximum benefit from, and be in a much better position to accept the potential benefits and risks of, biotechnology. [Several fundamental principles could underlie many of these safety procedures, including: primary consideration of the organism, including the genetically modified organism; appropriate application of the step-by-step and case-by-case concept; complementary consideration of risk assessment and risk management; classification into contained use or release to the environment; and a framework for safety in biotechnology.] [Primary bio-safety considerations with respect to genetically modified organisms should build on the principle of familiarity with those organisms and apply a flexible framework of bio-safety guidance. Bio-safety considerations should be based on the identification of hazard; scientific assessment of risk; the level of containment or, for releases, the local environment; and alternatives for risk management.]]

Objectives

33. The aim of this programme area is to ensure safety in biotechnology development, application, exchange and transfer through an international

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agreement on principles to be applied on risk assessment and management, ^{1/} with particular reference to health and environmental considerations, including the widest possible public participation and taking account of ethical considerations.

Activities

34. The proposed activities for this programme area call for close international cooperation. They should build upon planned or existing activities to accelerate the environmentally sound application of biotechnology, especially in developing countries. ^{1/}

(a) Management-related activities

35. Governments at the appropriate levels and [, where necessary], with the support of relevant international and regional organizations, the private sector, non-governmental organizations, academic and scientific institutions, should:

(a) Make the existing safety procedures widely available by collecting the existing information and adapting it to the specific needs of different countries and regions;

(b) Further develop, as necessary, the existing safety procedures to promote scientific development and categorization in the areas of risk assessment and risk management (information requirements; databases; procedures for assessing risks and conditions of release; establishment of safety conditions; monitoring and inspections; taking account of ongoing national, regional and international initiatives, avoiding duplication wherever possible);

(c) Compile, update and develop compatible safety procedures into a framework of internationally agreed principles to be applied on safety in biotechnology [as a basis for the development of an international [legal instrument] [code of conduct], taking into account decision 1/17 adopted by the Preparatory Committee at its first session], and promote information exchange as a basis for further development, drawing on the work already undertaken by international or other expert bodies;

^{1/} See research paper No. 55, entitled "Environmentally sound management of biotechnology: safety in biotechnology - assessment and management of risks" (February 1992), prepared by the United Nations Conference on Environment and Development secretariat to take account of comments made at the third session of the Preparatory Committee for the United Nations Conference on Environment and Development on part II of document A/CONF.151/PC/67, which incorporate the findings of the ad hoc workshop of Senior-Level Experts on Assessing and Managing Biotechnology Risks held in London in June 1991.

(d) Undertake training programmes at national and regional levels on the application of the proposed technical guidelines;

(e) Assist in exchanging information about the procedures required for safe handling and risk management and about the conditions of release of the products of biotechnology, and cooperate in providing immediate assistance in cases of emergencies that may arise in conjunction with the use of biotechnology products. 2/

(b) Data and information

36. See paragraphs 34 and 37.

(c) International and regional cooperation and coordination

37. Governments at the appropriate level, with the support of the relevant international and regional organizations, should raise awareness of the relative benefits and risks of biotechnology.

38. See paragraph 34. Further activities should include the following:

(a) Organizing one or more regional meetings between countries to identify further practical steps to facilitate international cooperation in bio-safety;

(b) Establishing an international network incorporating national, regional and global contact points;

(c) Providing direct assistance upon request through the international network, using information networks, databases and information procedures;

(d) [Preparing internationally agreed guidelines on safety in biotechnology releases, including risk assessment and risk management, liability and compensation.]

Means of implementation

(a) Financing and cost evaluation

39. [The estimated average annual cost of this programme area for the period 1993-2000 could be about \$2 million, all of which would come from international sources.]

(b) Scientific and technological means

40. See paragraph 34.

2/ Appropriate cross-references to other parts of Agenda 21 will be inserted later.

(c) Human resource development

41. See paragraph 34.

(d) Capacity-building

42. [Adequate international technical and financial assistance should be provided and technical cooperation to developing countries facilitated in order to build up technical, managerial, planning and administrative capacities at the national level to support the activities in this programme area. See also programme area E.]

E. Establishing enabling mechanisms for the development and the environmentally sound application of biotechnology

Basis for action

43. The accelerated development and application of biotechnologies, particularly in developing countries, will require a major effort to build up institutional capacities at the national and regional levels. In developing countries, enabling factors such as training capacity, know-how, research and development facilities and funds, industrial building capacity, capital (including venture capital) protection of intellectual property rights, and expertise in areas including marketing research, technology assessment, socio-economic assessment and safety assessment are frequently inadequate. Efforts will therefore need to be made to build up capacities in these and other areas and to match such efforts with appropriate levels of financial support. There is therefore a need to strengthen the endogenous capacities of developing countries by means of new international initiatives to support research in order to speed up the development and application of both new and conventional biotechnologies to serve the needs of sustainable development at local, national and regional levels. National mechanisms to allow for informed comment by the public with regard to biotechnology research and application should be part of the process.

44. Some activities at the national, regional and global levels already address the issues outlined in programme areas A, B and C. Several others are related to programme area D, particularly with respect to the international codification of safety guidelines in biotechnology, and to the providing of advice to individual countries on the development of national guidelines and systems for the implementation of those guidelines. These activities are generally uncoordinated, however, involving many different organizations, priorities, constituencies, time-scales, funding sources and resource constraints. There is a need for a much more cohesive and coordinated approach to harness available resources in the most effective manner. [Research in biotechnology and the applications of its findings could have significant positive and negative socio-economic cultural impacts and should therefore should be carefully considered in the earliest phases of the development of biotechnology.]

Objectives

45. The objectives are to:

(a) Promote the development and application of biotechnologies, with special emphasis on developing countries, by:

- (i) Enhancing existing efforts at national, regional and global levels;
- (ii) [Mobilizing additional financial resources and instituting innovative financing mechanisms, as necessary for selected priorities, to address the specific needs of different regions or socio-economic conditions]; ^{3/}
- (iii) Providing the necessary support for biotechnology, particularly research and product development, at the national, regional and international levels;
- (iv) Raising public awareness regarding the relative beneficial aspects of and risks related to biotechnology, to contribute to sustainable development;
- (v) Helping to create a favourable climate for investments, industrial capacity-building and distribution/marketing;
- (vi) Encouraging the exchange of scientists among all countries and discouraging the "brain drain";
- (vii) Recognizing and protecting the traditional methods and knowledge of indigenous and local communities and ensuring their participation in the economic and commercial benefits arising from developments in biotechnology;

(b) Identify ways and means of enhancing current efforts, building wherever possible on existing enabling mechanisms, particularly regional, to determine the precise nature of the needs for additional initiatives, particularly in respect of developing countries, and develop appropriate response strategies, including proposals for any new international mechanisms;

(c) Establish or adapt appropriate mechanisms for safety appraisal and risk assessment at local, regional and international levels, as appropriate;

(d) [Consider extending legislation to include liability and compensation for social and environmental damage resulting from applications of biotechnology.];

^{3/} It has been proposed that this objective should be transferred to the Means of implementation section.

(e) [Encourage the consideration of appropriate cultural, social, ethical, and humane factors when undertaking the transfer or exchange of technologies.]

Activities

(a) Management-related activities

46. Governments at the appropriate level, [where necessary] with the support of international and regional organizations, the private sector, non-governmental organizations and academic and scientific institutions should:

(a) Develop policies and mobilize additional resources to facilitate greater access to the new biotechnologies, particularly by and among developing countries;

(b) Implement programmes to create greater awareness of the potential and relative benefits and risks of the environmentally sound application of biotechnology among the public and key decision makers;

(c) Undertake an urgent review of existing enabling mechanisms, programmes and activities at national, regional and global levels to identify strengths, weaknesses and gaps, and to assess the priority needs of developing countries;

(d) Define and implement strategies to overcome constraints identified in the areas of food, feed and renewable raw materials; human health; and environmental protection, building upon existing strengths;

(e) Undertake an urgent follow-up and critical review to identify ways and means of strengthening endogenous capacities within and among developing countries for the environmentally sound application of biotechnology, including, as a first step, ways to improve existing mechanisms, particularly at the regional level, and, as a subsequent step, the consideration of possible new international mechanisms, such as regional biotechnology centres;

(f) Develop strategic plans for overcoming targeted constraints by means of appropriate research, product development and marketing;

(g) Establish additional quality-assurance standards for biotechnology applications and products where necessary.

(b) Data and information

47. The following activities should be undertaken: facilitation of access to existing information dissemination systems, especially among developing countries; improvement of such access where appropriate; and consideration of the development of a directory of information.

(c) International and regional cooperation and coordination

48. Governments at the appropriate level, with the assistance of international and regional organizations, should develop appropriate new initiatives to identify priority areas for research based on specific problems and facilitate access to new biotechnologies, particularly by and among developing countries, among relevant undertakings within those countries, in order to strengthen endogenous capacities and to support the building of research and institutional capacity in those countries.

Means of implementation

(a) Financing and cost evaluation

49. [The estimated average annual cost of this programme area for the period 1993-2000 could be about \$5 million, all of which would come from international financing sources. This does not include the costs of any innovative mechanisms arising from the implementation of this programme area.]

(b) Scientific and technological means

50. Workshops, symposia, seminars and other exchanges among the scientific community at regional and global levels, on specific priority themes, will need to be organized, making full use of the existing scientific and technological manpower in each country for bringing about such exchanges.

(c) Human resource development

51. Personnel development needs will need to be identified and additional training programmes developed at the national, regional and global levels, especially in developing countries. These should be supported by increased training at all levels, graduate, postgraduate and post-doctoral, as well as by the training of technicians and support staff, with particular reference to the generation of trained manpower in consultant services, design, engineering and marketing research. Training programmes for lecturers training scientists and technologists in advanced research institutions in different countries throughout the world will also need to be developed, and systems giving appropriate rewards, incentives and recognition to scientists and technologists will need to be instituted (see para. 50). Conditions of service will also need to be improved at the national level in developing countries to encourage and nurture trained manpower with a view to retaining that manpower locally. Society should be informed of the social and cultural impact of the development and application of biotechnology.

(d) Capacity-building

52. Biotechnology research and development is undertaken both under highly sophisticated conditions and at the practical level in many countries. Efforts will be needed to ensure that the necessary infrastructure facilities for research, extension and technology activities are available on a

decentralized basis. Global and regional collaboration for basic and applied research and development will also need to be further enhanced and every effort should be made to ensure that existing national and regional facilities are fully utilized. Such institutions already exist in some countries and it should be possible to make use of them for training purposes and joint research projects. Strengthening of universities, technical schools and local research institutions for the development of biotechnologies and extension services for their application will need to be developed, especially in developing countries.



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Agenda item 3 (a)

LAND RESOURCES: DEFORESTATION

Text submitted by the Vice-Chairman of the Working Group, Mr. Charles A. Liburd (Guyana), as a result of negotiations held on a non-legally binding authoritative statement of principles for a global consensus on the management, conservation and sustainable development of all types of forests

PREAMBLE

- (a) The subject of forests is related to the entire range of environmental and development issues and opportunities including [the right to] socio-economic development.
- (b) The guiding objective of these principles is to contribute to the achievement of the management, conservation and sustainable development of forests, and to provide for their multiple and complementary function and uses.
- (c) Forestry issues and opportunities should be examined in a holistic and balanced manner within the overall context of environment and development, taking into consideration the multiple functions and uses of forests, including traditional uses, and the likely economic and social stress when these uses are constrained or restricted, as well as the potential for development that sustainable forest management can offer.
- (d) [The process of the United Nations Conference on Environment and Development is the most appropriate forum for conclusive decisions pertaining

to global consensus on forests [which should form the basis for [any subsequent preparations and adoption of a legal instrument on forests] [all other negotiations involving forests]].

(e) These principles should apply to all types of forests, both natural and planted, in all geographic regions and climatic zones, including austral, boreal, sub-temperate, temperate, sub-tropical and tropical.

(f) All types of forests, in particular primary/old-growth forests, embody complex and unique ecological processes which are the basis for their present and potential capacity to provide resources to satisfy human needs as well as environmental values, and as such their sound management and conservation is of concern to the Governments of the countries to which they belong [and to the world community] [are of interest to the world community and only in so far as they pertain to international cooperation and]

(g) [Forests are essential to economic development [of all sectors] and the maintenance of all forms of life. States have the right to utilize their forests in accordance with their development needs. Adequate management, conservation and sustainable development of all types of forest require sustainable [management], production and consumption patterns [in all countries, particularly in developed countries, remunerative prices for forest products that embody the full environmental and replacement cost; as well as the easing of the debt burden and the eradication of poverty in developing countries. [International cooperation will be necessary for the management, conservation and sustainable development of forests.]]] [The globally shared benefits of wise forest management and conservation should be supported by all beneficiary countries while recognizing the special [stewardship] role of the countries in whose territories the forest occur.]

(h) [Recognizing that the responsibility for forest management, conservation and sustainable development is in many States allocated among federal/national, state/provincial and local levels of government, each State, in accordance with its constitution and/or national legislation, should pursue these principles at the appropriate level of government.]

PRINCIPLES/ELEMENTS

1. (a) Reaffirm principle 21 of the Stockholm Declaration: "States have, in accordance with the Charter of the United Nations and the principles of international law, the sovereign right to exploit their own resources pursuant to their own environmental policies, and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction".

(b) [The burden of] The incremental cost of forest conservation and [sustainable] development requires increased international cooperation [and should be equitably shared by the international community] [is the responsibility of all countries].

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2. (a) States [have the [sovereign and inalienable] right to] [should] utilize, manage and develop their forests in accordance with their development needs and level of socio-economic development and on the basis of national policies consistent with sustainable development and legislation, including the conversion of such areas for other uses within the overall socio-economic development plan based on rational land-use policies.

(b) Forest resources and forest lands should be sustainably managed to meet the social, economic, ecological, cultural and spiritual human needs of present and future generations. These needs are for forest products and services, such as wood and wood products, water, food, fodder, medicine, fuel, shelter, employment, recreation, habitats for wildlife, landscape diversity, and other forest products. Appropriate measures should be taken to protect forests against harmful effects of pollution, including air-borne pollution, fires, pests and diseases in order to maintain their full multiple value.

(c) The provision of timely, reliable and accurate information on forests and forest ecosystems is essential for public understanding and informed decision-making and should be ensured.

(d) Governments should promote and provide opportunities for the participation of interested parties, including local communities and indigenous people, industries, labour, non-governmental organizations and individuals, forest dwellers and women, in the development, implementation and planning of national forest policies.

3. (a) National policies and strategies should provide a framework for increased efforts, including the development and strengthening of institutions and programmes for the management, conservation and sustainable development of forests and forest lands.

(b) International institutional arrangements, building on those organizations and mechanisms already in existence, as appropriate, should facilitate international cooperation in the field of forests.

(c) All aspects of environmental protection and social and economic development as they relate to forests and forest lands should be integrated and comprehensive.

4. The vital role of all types of forests in maintaining the ecological processes and balance at the local, national, regional and global levels through, inter alia, their role in protecting fragile ecosystems, watersheds and freshwater resources and as rich storehouses of biodiversity and biological resources and sources of genetic material for biotechnology products, as well as carbon storage, should be recognized.

5. (a) National forest policies should recognize the interests and respect the rights of indigenous people, local communities, and forest dwellers. Favourable conditions should be promoted for these groups for them to have an economic stake in forest use, to perform economic activities, and achieve and

maintain cultural identity and social organization, as well as adequate levels of livelihood and well-being, including through those land tenure arrangements which serve as incentives for the sustainable management of forests.

(b) The full participation of women in all aspects of management, conservation and sustainable development of forests should be actively promoted.

6. (a) All types of forest play an important role in meeting energy requirements through the provision of a renewable source of bio-energy, particularly in developing countries, and the demands for fuelwood for household and industrial needs should be met through sustainable forest management, afforestation and reforestation. To this end, the potential contribution of plantations of both indigenous and introduced species for the provision of both fuel and industrial wood should be recognized.

(b) National policies and programmes should take into account the relationship, where it exists, between the conservation, management and sustainable development of forests and all aspects related to the production, consumption, recycling and/or final disposal of forest products.

(c) Decisions taken on the management, conservation and sustainable development of forest resources should benefit to the extent practicable from a comprehensive assessment of economic and non-economic values of forest goods and services and of the environmental costs and benefits. The development and improvement of methodologies for such evaluations should be promoted.

(d) The role of planted forests and permanent agricultural crops as sustainable and environmentally sound sources of renewable energy and industrial raw material should be recognized, enhanced and promoted. Their contribution to the maintenance of ecological processes, to offsetting pressure on primary/old-growth forest and to providing regional employment and development with the adequate involvement of local inhabitants should be recognized and enhanced.

(e) Natural forests also constitute a source of goods and services and their conservation, sustainable management and use should be promoted.

7. (a) Efforts should be made to promote a supportive international economic climate conducive to sustained and environmentally sound development of forests in all countries, [which include, inter alia, change in the unsustainable patterns of production and consumption in all countries, particularly in industrialized countries [, the eradication of poverty and the promotion of food security, particularly in developing countries]].

(b) [Financial resources for economic adjustment should be provided for the other sectors of the economy of developing countries with substantive forest cover which set aside more than their fair share of [undisturbed] [natural] forests for the purpose of conservation].

[Any developing country possessing a forest cover that exceeds its present economic and ecological needs should benefit from specific financial arrangements to ensure sustainable development particularly of the forestry sector].

[Resources should be provided for investment in globally beneficial forest conservation through cooperative arrangements between countries and appropriate market-based mechanisms, and in the context of internationally agreed strategies].

8. (a) Efforts should be undertaken towards the greening of the world [by all countries] [in all geographical areas] [, particularly] [notably] [in developed countries], [which have in the past so destroyed their extensive forests and continue to do so by acid rains] to increase their forest cover [, and these countries should take positive and transparent actions to increase their forest cover through reforestation and afforestation [and conservation of existing forests] [as well as maintaining, as far as practicable, existing forest cover] [where beneficial]. [In this context, cooperative arrangements between countries for economically efficient joint implementation of forest management activities should be encouraged.]

(b) Efforts to maintain and increase forest cover and forest productivity should be undertaken in ecologically, economically and socially sound ways through the rehabilitation, reforestation and re-establishment of trees and forests on unproductive, degraded and deforested lands, as well as through the management of existing forest resources.

(c) The implementation of national policies and programmes aimed at forest management, conservation and sustainable development, particularly in developing countries, should be supported by international financial and technical cooperation, including through the private sector, where appropriate.

(d) [Sustainable forest management and use should be carried out in accordance with [internationally accepted] [formally agreed in multilateral forums] environmentally sound [national] guidelines.]

(e) Forest management should be integrated with management of adjacent areas so as to maintain ecological balance and sustainable productivity.

(f) National policies and/or legislation aimed at management, conservation and sustainable development of forests should include the protection of [ecologically viable] representative or unique examples of forests, including primary/old-growth forests, cultural, spiritual, historical, religious and other unique valued forests of national importance.

(g) [Availability of biological resources, including genetic material, shall be with due regard to the sovereign rights of the countries where the forests are located and to the sharing of technology and profits from biotechnology products, for example, pharmaceutical, that are derived from these resources.] (note: subject to convention on biodiversity)

(h) National policies should ensure that environmental impact assessments should be carried out where [government] actions are likely to have significant adverse impacts on important forest resources.

9. (a) [The external indebtedness, in particular of developing countries, [the phenomenon of net transfer of resources from developing to developed countries], the inaccurate economic valuation of forest products and the lack of effective market forces are among the major factors that reduce the capacity and ability of [developing] countries to manage, conserve and develop their forest resources, and national and international policies should be devised to redress such problems in the broader context of a supportive international economic environment.]

Alternative: [The external indebtedness, in particular of developing to developed countries, the phenomenon of net transfer of resources to developed countries, the inadequate prices for forest products below full replacement cost, and the lack of effective market forces are among the major factors that reduce the capacity and ability of developing countries to manage, conserve and develop their forest resources, and international policies should be devised to redress such problems in the broader context of a supportive international economic environment.]

(b) The problems that hinder efforts to attain the conservation and sustainable use of forest resources and that stem from the lack of alternative options available to local communities, in particular the urban poor and poor rural populations who are economically and socially dependent on forests and forest resources, should be addressed by Governments and the international community.

(c) [Policy formulation with respect to forests should take account of the pressures and demands imposed on forest ecosystems and resources from causes outside the forest sector, both domestically and internationally, and means of dealing with these pressures and demands should be [sought] [considered]].

10. [Developing countries should be compensated for the opportunity cost foregone [, including historical loss of primary forest cover,] and the comparatively higher cost entailed [in the short term by] [international cooperation is required to assist developing countries in meeting the higher cost entailed in] [increasing forest cover and sustainable management and conservation of their forest resources [in order to maintain biological diversity and climatic stability].]

11. [[New] [Adequate] and additional] financial resources should be provided to developing countries through [existing mechanisms both bilateral and multilateral] [a global fund] to enable them to sustainably manage, [enhance], conserve and develop their forests' resources, including afforestation, reforestation and combating deforestation, forest and land degradation.

12. [The transfer of environmentally sound [appropriate] technology to developing countries], [Technology cooperation in environmentally sound

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technologies] [, including on concessional and preferential terms,] [Joint development of technology relevant to the conservation and sustainable utilization of biological diversity, including genetic material in gene banks, as well as those technologies that make use of forest resources including biological resources and genetic material for other purposes such as pharmaceuticals etc.] should be promoted to enable developing countries to enhance their endogenous capacity and to better manage, conserve and develop their forest resources.

13. (a) Scientific research, forest inventories and assessments, carried out by national institutions which take into account, where relevant, biological, physical, social, and economic variables and the technological development as well as its application in the field of sustainable forest management, conservation and development, should be strengthened through effective modalities, including international cooperation. In this context, attention should also be given to research and development of sustainably harvested non-wood products.

(b) National and, where appropriate, regional and international institutional capabilities in education, training, science, technology, economics, anthropology and social aspects of forests and forest management are essential to the conservation and sustainable development of forests and should be strengthened.

(c) International exchange of information on the results of forest and forest management research and development should be enhanced and broadened, as appropriate, making full use of education and training institutions, including those in the private sector.

(d) Appropriate indigenous capacity and local knowledge regarding the conservation and sustainable development of forests should, through institutional and financial support, and in collaboration with the people in local communities concerned, be recognized, respected, recorded, developed [compensated] and, as appropriate, introduced in the implementation of programmes.

14. (a) Trade in forest products [should] [must] be [conducted in a manner] consistent with international trade law and practices [as embodied for example in the General Agreement on Tariffs and Trade and its subsidiary agreements].

Alternative (a)

Trade in forest products [must] [should] be [based on non-discriminatory and multilaterally agreed rules and procedures] [consistent with international trade law and practices]. [In this context, [orderly and] free international trade in forest products should be facilitated.]

(b) [Removal of tariff barriers and impediments to] the provision of better market access and better prices for higher value-added [sustainably managed] forest products and their local processing should be encouraged to

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enable producer countries to better conserve and manage their renewable forest resources.

(c) [Incorporation of environmental costs and benefits into] market forces and mechanisms, in order to achieve forest conservation and sustainable development, should be encouraged both domestically and internationally.

(d) Forest conservation and sustainable development policies should be integrated with economic, trade [and other relevant] policies.

(e) [[Subsidies,] [protectionism] [and lower export revenues] [and other governmental interventions] that encourage [unnecessary] deforestation and unsound forest practices should be [eliminated] [discouraged], wherever practicable, [and subsidies or incentives encouraging sound practices should be encouraged where applicable].]

Alternative: [Fiscal, trade and other governmental interventions that encourage unnecessary deforestation and unsound practices should be eliminated [wherever practicable]. Financial or other incentives encouraging sound forest management practices should be introduced [where applicable].]

15. (a) [All forms of unilateral action to restrict and/or ban the use of timber and other forest products in international trade should be removed, as such actions are counter-productive in terms of long-term sustainable forest management [, and relevant national legislation should be promulgated to prohibit all such unilateral restrictions and/or bans].]

(b) [Orderly and] free international trade in forest products [from sustainably managed forest resources] should be facilitated.

16. Pollutants, particularly air borne pollutants, including those responsible for acidic deposition, that are harmful to the health of forest ecosystems at the local, national, [trans-boundary] and global levels should be [strictly] controlled [, where necessary].

17. [Forests constitute a [significant] reservoir of carbon and [their role in the global carbon cycle] should be [recognized] [taken into account] and considered [as appropriate] [in the development of national forests policies and plans].]



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PROTECTION OF THE ATMOSPHERE

Text submitted by the Chairman on the basis of negotiations
held on document A/CONF.151/PC/100/Add.14

(Section II, chapter 1, of Agenda 21)

BACKGROUND

The atmosphere component of Agenda-21 should be flexible and evolving. The Intergovernmental Negotiating Committee for a Framework Convention on Climate Change (INC) is addressing many of the issues contained in the following text. In so far as the following proposals refer to climate-related activities discussed by the INC, they should not pre-empt, duplicate or be interpreted as prejudging the INC negotiations concerning questions that may arise and be discussed there, such as general objectives and commitments, standards, conditionality, institutional arrangements and mechanisms for funding incremental costs. Negotiations on this chapter of Agenda 21, therefore, will have to take account of the state of negotiations on the framework convention on climate change.

Similarly, the following text, in so far as it relates to combating the depletion of the ozone layer, should not pre-empt or prejudice the deliberations within the Montreal Protocol process. Negotiations of this text by the Preparatory Committee will have to take account of the status of obligations under the Montreal Protocol and its 1990 amendments.

INTRODUCTION

1. [An overall objective in this area is to achieve the early entry into force of the framework convention on climate change and its related instruments that might be agreed upon, with the widest possible participation, and to pursue [energy and other] relevant [policies]/[and programmes] which will contribute to the achievement of the objectives of that convention. (NOTE: The final language of this paragraph will be dependent on the outcome of the INC.)

2. The present chapter includes four programme areas:

- A. Addressing the uncertainties: improving the scientific basis for decision-making;
- B. Promoting sustainable development:
 - 1. Energy development, efficiency and consumption;
 - 2. Transportation;
 - 3. Industrial development;
 - 4. Terrestrial and marine resource development and land use;
- C. Stratospheric ozone depletion: implications and response strategies;
- D. Transboundary atmospheric pollution.

PROGRAMME AREAS

- A. Addressing the uncertainties: improving the scientific basis for decision-making

Basis for action

3. Substantial knowledge of the environmental and development issues related to the atmosphere has been gained. However, concern over climate change and climate variability, air pollution and ozone depletion has created new demands for scientific and economic information. Better understanding and prediction of physical, chemical and biological properties of the atmosphere and of the affected ecosystems, as well as health impacts and their interactions with socio-economic factors are needed.

Objectives

4. The objectives of this programme area are:

- (a) To improve the understanding of the processes that influence and are influenced by the Earth's atmosphere on a global, regional and local scale,

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including, inter alia, physical, chemical, geological, biological, oceanic, hydrological, economic and social processes; and to reduce uncertainties with regard to the economic and social consequences of response measures taken in this regard;

(b) To develop, maintain and, where appropriate, enhance systematic observations of the atmosphere and affected ecosystems, as well as impacts on human health and social and economic systems. The emphasis should be on assembling coincident and supportive databases, where possible, and on exchanging these data and related information to the fullest extent possible;

(c) To enhance international cooperation in building the capacities and abilities of countries to identify atmospheric problems, to conduct research, to assemble, collect and assess data by using existing data and by establishing and expanding systematic observation capabilities, and to participate in the exchange of the resulting data and information.

Activities

5. Governments [and regional economic integration organizations] at the appropriate level, with the cooperation of the relevant United Nations bodies and, as appropriate, intergovernmental and non-governmental organizations, the private sector and financial institutions, should:

(a) Identify priority areas of scientific, technical and socio-economic research related to the critical linkages between the environmental and development issues arising in all sectors, as they relate to the atmosphere, with the support of relevant United Nations bodies, regional and subregional organizations, industry, research institutions and other non-governmental organizations;

(b) Promote studies on issues concerning the interaction between socio-economic parameters and atmospheric changes, such as climate change, enhanced ultraviolet radiation and increase in various air pollutants, as they relate to various ecosystems; oceans and all seas and their surface layers; economic sectors, especially at the regional and local levels; soils; and biodiversity in general;

(c) Ensure a more balanced geographical coverage of the Global Atmosphere Watch network by facilitating, inter alia, the establishment and operation of additional systematic observation stations and by contributing to the development, utilization and accessibility of the Global Atmosphere Watch database;

(d) Promote cooperation in the development of early detection systems concerning changes in the atmosphere, both those resulting from human activities and others;

/...

(e) Invite the Intergovernmental Panel on Climate Change (IPCC) to examine the feasibility of, and where appropriate, develop scientifically credible methodologies for identifying critical loads for greenhouse gas emissions;

(f) Cooperate in facilitating the participation and training of experts and technical staff, particularly of developing countries, in the fields of research, data assembly, collection and assessment, and systematic observation related to the atmosphere;

(g) Promote the exchange of data and information, including those related to national, subregional and regional experiences for air pollution control;

(h) Maintain, enhance or establish the capability to predict atmospheric changes and fluctuations and to assess the resulting environmental consequences and socio-economic impacts.

B. Promoting sustainable development

1. Energy development, efficiency and consumption

Basis for action

6. Much of the world's energy is produced and used in ways that could not be sustained if technology were to remain constant and if overall quantities were to increase substantially. This is particularly true in so far as atmospheric emissions are concerned. The international community must continually strive for energy development paths that are increasingly [safe and] sound environmentally and economically efficient. This will require reliance on environmentally [safe and] sound energy systems, increasingly based on efficiency in energy production, transmission, distribution and consumption, as well as on the use of [new and] renewable sources of energy. All energy sources will need to be used in ways that respect the atmosphere and the environment as a whole.

7. The existing constraints to increasing the energy supplies required for pursuing the path towards sustainable development, particularly in developing countries, need to be removed.

Objectives

8. The objectives of this programme are:

(a) As a long-term objective, to adopt methods and techniques that move away from present polluting and wasteful energy production and consumption patterns. [This is closely linked to the goal of diminishing current adverse effects on the atmosphere.] The new energy systems should be environmentally [safe and] sound, and increasingly based on efficiency in energy production,

/...

transmission, distribution and consumption, as well as on the use of [new and] renewable sources of energy;

(b) To promote efficiency in energy production, transmission, distribution and use;

(c) To promote the use of efficient and less polluting technologies in the production and consumption of energy from fossil fuels, from [new and] renewable sources of energy and other conventional sources, which will remain important;

(d) To increase the contribution of environmentally [safe and] sound energy systems to the energy supply and consumption mix, in particular through the promotion, distribution and development of renewable sources of energy;

(e) To promote and enhance adequate and equitable energy availability in economically viable and environmentally [safe and] sound ways to respond to the increasing energy needs for sustainable economic and social development, particularly in developing countries;

(f) To cooperate to undertake the necessary technical, research, development and adaptation measures to support a transition to environmentally [safe and] sound energy systems. Special consideration will need to be given to countries heavily dependent on the production, export and consumption of fossil fuels to ensure that the transition does not adversely affect their development.

Activities

9. Governments [and regional economic integration organizations] at the appropriate level, with the cooperation of the relevant United Nations bodies and, as appropriate, intergovernmental and non-governmental organizations, the private sector and financial institutions, should:

(a) Cooperate in identifying and developing energy sources to promote the availability of increased energy supplies, to support sustainable development efforts, in particular in developing countries;

(b) Cooperate in the development of appropriate methodologies for making integrated energy, environment and economic policy decisions in a sustainable and a long-term framework, while supporting efforts to carry out environmental impact assessments of relevant policy decisions and projects. Planning and implementation of energy efficiency should as much as possible be adapted by countries, taking into account regional and subregional energy strategies, where appropriate;

(c) Promote the transfer, development and use of improved energy-efficient technologies, including indigenous technologies, in all relevant sectors, giving special attention to renewable sources of energy and the rehabilitation and modernization of power systems, through capacity-building and management, particularly in developing countries;

/...

(d) [Study and develop economic instruments, which may play an important role in achieving structural changes and improved efficiency in the production and consumption of energy;]

(e) Review current energy supply mixes to determine how the contribution of environmentally [safe and] sound energy systems as a whole, particularly [new and] renewable energy systems could be increased in an economically efficient manner, taking into account respective countries' unique social, physical, economic and political characteristics[, including measures that would ensure that [new and] renewable energy sources are not discriminated against in domestic energy markets];

(f) Coordinate energy plans regionally and subregionally, where applicable, and study the feasibility of efficient distribution of energy from [new and] renewable energy sources;

(g) To consider, with a view to increasing research, development and the introduction of environmentally [safe and] sound energy systems, particularly for renewable energy sources and to promote research and development, particularly in developing countries;

(h) Cooperate to increase the availability of capacity, capabilities and relevant technologies - recognizing that technology includes biotechnology - in developing countries for utilizing and producing environmentally sound renewable energy resources, such as solar, wind, geothermal, hydropower and biomass, including woodfuel resources. Each should be utilized in a manner that fosters sustainable development and minimizes environmental stress and health impacts, emphasizing the need for easily available, cleaner burning, smoke-free household fuel;

(i) [Develop sustainable energy policies [programmes] in order to improve energy efficiency by, inter alia:

- (i) Formulating, in cooperation with the private sector, appropriate objectives or policies relating to energy production and consumption;
- (ii) Promoting application of economic instruments with a view to taking into account environmental and other social costs while encouraging greater efficiency;
- (iii) Building capacity for energy planning and programme management in energy efficiency, including the introduction, development and management of [new and] renewable sources of energy;]

(j) [Strengthen existing and/or set new energy efficiency and emission standards or recommendations on specific technologies, as appropriate. Countries may wish to coordinate these standards or recommendations at regional and subregional levels. Such standards or recommendations should provide ongoing incentives for more efficient and less polluting energy use, with special attention being paid to the promotion of the development and use of alternative and less polluting technologies;]

(k) Encourage education and awareness-raising programmes at the local, national, subregional and regional levels concerning energy efficiency and environmentally [safe and] sound energy systems;

(l) Establish or enhance, as appropriate, in cooperation with the private sector, labelling programmes for products to provide decision makers and consumers with information on opportunities for energy efficiency.

2. Transportation

Basis for action

10. The transport sector is a source of atmospheric emissions. With increasing economic development there will be consequent increases in transportation needs, which could be accompanied by related emissions, unless appropriate action is taken. There is need for a review of existing transport systems, involving vehicle emissions, the reorientation and management of traffic and transport systems, and infrastructural issues, including land use and urban planning.

Objectives

11. The objectives of this programme are:

(a) To develop and promote programmes and strategies to limit and reduce, as appropriate, emissions of pollutants into the atmosphere and other adverse environmental effects of the transport sector, taking into account development priorities, as well as the specific local and national circumstances and safety aspects;

(b) To plan and develop more efficient and less polluting transportation systems, especially mass transit, to support economic development efforts in an environmentally [safe and] sound way, giving special attention to urban and metropolitan areas.

Activities

12. Governments [and regional economic integration organizations] at the appropriate level, with the cooperation of the relevant United Nations bodies and, as appropriate, intergovernmental and non-governmental organizations, the private sector and financial institutions, should:

(a) Develop and promote more efficient and less polluting transport systems, particularly integrated rural and urban mass transit, as well as environmentally sound road networks, taking into account the needs for sustainable social and economic development, particularly in developing countries;

/...

(b) Facilitate at the international, regional subregional and national levels [cooperation related to] the transfer of safe, energy-efficient and less polluting transport technologies, particularly to the developing countries, including the implementation of appropriate training programmes;

(c) Strengthen, as appropriate, their efforts at collecting, analysing and exchanging relevant information on the relation between environment and transport. Particular attention needs to be given to systematic observation of emissions and to the development of a transport database, including information on the types and numbers of vehicles, fuel types [and pricing] and pollution controls;

(d) With the aim of enhancing and developing environmentally sustainable transportation systems, evaluate and, as appropriate, promote economic mechanisms, including pricing, which, inter alia seek to discourage large, fuel-consuming and polluting vehicles, and encourage the development and use of alternative fuels;

(e) Develop or enhance, as appropriate, mechanisms to integrate the transport planning strategies and urban and regional settlement planning strategies, with the aim of reducing additional needs for transport;

(f) Study, within the framework of the United Nations and appropriate international bodies, the feasibility of convening regional conferences on transport and the environment and their scope; such conferences could involve governmental representation and relevant international organizations, as well as the private sector and relevant academic institutions.

3. Industrial development

Basis for action

13. Industry is essential for the production of goods and services and is a major source of employment and income, and industrial development as such is essential for economic growth. At the same time, industry is a major energy user and consequently results in emissions into the atmosphere and the environment as a whole. Protection of the atmosphere can be enhanced, inter alia, by increasing energy efficiency in industry, installing or improving pollution abatement technologies and replacing CFCs and other ozone-depleting substances with appropriate substitutes, as well as by promoting and implementing practices based on recycling and reducing wastes and by-products.

Objectives

14. The objectives of this programme are:

(a) To increase countries' capacities to undertake industrial development efforts in an environmentally [safe and] sound manner to support their development objectives;

/...

(b) To increase efficiency in the production and consumption by industry of [energy and other] resources and materials;

(c) To improve pollution-abatement technologies, develop new, environmentally [safe and] sound technologies and facilitate [cooperation related to] the transfer of those technologies by inter alia, supporting and implementing relevant international agreements, as appropriate.

Activities

15. Governments [and regional economic integration organizations] at the appropriate level, with the cooperation of the relevant United Nations bodies and, as appropriate, intergovernmental and non-governmental organizations, the private sector and financial institutions, should:

(a) Encourage industry to increase and strengthen its capacity to develop products and processes that are more energy-efficient, safe and environmentally sound;

(b) Develop, improve and apply environmental impact assessments to foster sustainable industrial development;

(c) Alternative A:

[Support initiatives promoting clean and more efficient technologies and processes in industries with a view to limiting industrial pollution;]

Alternative B:

[Promote programmes and practices that encourage sustainable industrial development, technologies and processes, taking into account area-specific accessible potentials for energy, particularly safe and renewable sources of energy, with a view to limiting industrial pollution;]

(d) [Continue research and other work aimed at developing methodologies and criteria for incorporating the social costs of the environmental impacts caused by industrial production, as well as the treatment and disposal of wastes generated, into the prices of the final products;]

(e) [Promote efficient use of materials and resources, taking into account all aspects related to cycles of production and consumption, including reuse, recycling, recovery and disposal.]

/...

4. Terrestrial and marine resource development and land use

Basis for action

16. Land-use and resource policies will both affect and be affected by changes in the atmosphere. Certain practices related to terrestrial and marine resources and land use can decrease greenhouse gas sinks and increase atmospheric emissions. The loss of biological diversity may reduce the resilience of ecosystems to climatic variations and air pollution damage. Atmospheric changes can have important impacts on forests, biodiversity, and freshwater and marine ecosystems, as well as on economic activities, such as agriculture. Policy objectives in different sectors may often diverge and will need to be handled in an integrated manner.

Objectives

17. The objectives of this programme are:

(a) To promote terrestrial and marine resource utilization and land-use practices that contribute to:

- (i) Reducing atmospheric pollution or limiting anthropogenic emissions of greenhouse gases;
- (ii) The conservation, sustainable management and enhancement, where appropriate, of all sinks for greenhouse gases;
- (iii) The conservation and sustainable use of natural and environmental resources;

(b) To ensure that actual and potential atmospheric changes and their socio-economic and ecological impacts are fully taken into account in planning and implementing policies and programmes concerning terrestrial and marine resources utilization and land-use practices.

Activities

18. Governments [and regional economic integration organizations] at the appropriate level, with the cooperation of the relevant United Nations bodies and, as appropriate, intergovernmental and non-governmental organizations, the private sector and financial institutions, should:

(a) Implement policies and programmes that will discourage inappropriate and polluting land-use practices and promote sustainable utilization of terrestrial and marine resources and environmentally sound land-use practices;

(b) [Consider promoting the development and use of terrestrial and marine resources and land-use practices that will be more resilient to atmospheric changes and fluctuations.]

/...

C. Preventing stratospheric ozone depletion

Basis for action

19. Analysis of recent scientific data has confirmed the growing concern over the continuing depletion of the Earth's stratospheric ozone layer by reactive chlorine and bromine from man-made chlorofluorocarbons (CFCs), halons and related substances. While the 1985 Vienna Convention for the Protection of the Ozone Layer and the 1987 Montreal Protocol on Substances that Deplete the Ozone Layer (as amended in London in 1990) were important steps in international action, the total chlorine loading of the atmosphere of ozone-depleting substances has continued to rise. This can be changed through compliance with the control measures identified within the Protocol.

Objectives

20. The objectives of this programme area are:

(a) To realize the objectives defined in the Vienna Convention and the Montreal Protocol and its 1990 amendments, including the consideration in those instruments of the special needs and conditions of the developing countries and the availability to them of alternatives to substances that deplete the ozone layer. Technologies and natural products that reduce demand for these substances should be encouraged;

(b) To develop strategies aimed at mitigating the adverse effects of ultraviolet radiation reaching the Earth's surface as a consequence of depletion and modification of the stratospheric ozone layer.

Activities

21. Governments [and regional economic integration organizations] at the appropriate level, with the cooperation of the relevant United Nations bodies and, as appropriate, intergovernmental and non-governmental organizations, the private sector and financial institutions, should:

(a) Ratify, accept or approve the Montreal Protocol and its 1990 amendments; pay their contributions towards the Vienna/Montreal trust funds and the interim multilateral ozone fund promptly; and contribute as appropriate, towards ongoing efforts under the Montreal Protocol and its implementing mechanisms, including making available substitutes for CFCs and other ozone-depleting substances and facilitating the transfer of the corresponding technologies to developing countries in order to enable them to comply with the obligations of the protocol;

(b) Support further expansion of the Global Ozone Observing System by facilitating - through bilateral and multilateral funding - the establishment and operation of additional systematic observation stations, especially in the tropical belt in the southern hemisphere; participate actively in the continuous assessment of scientific information and the health and

/...

environmental effects, as well as of the technological/economic implications of stratospheric ozone depletion; and consider further actions that prove warranted and feasible on the basis of these assessments;

(c) Based on the results of research on the effects of the additional ultraviolet radiation reaching the Earth's surface, in the fields of human health, agriculture and marine environment, [States and international organizations should] consider taking appropriate remedial measures;

(d) Alternative A:

[Replace CFCs and other ozone-depleting substances, consistent with the Montreal Protocol, recognizing that a replacement's suitability should be evaluated holistically and not simply based on its contribution to solving one atmospheric or environmental problem;]

Alternative B:

[Replace CFCs and other ozone-depleting substances with appropriate substitutes that do not deplete the ozone layer, or do so to a significantly lesser degree. Preference should be given to substitutes that are not greenhouse gases.]

D. Transboundary atmospheric pollution

Basis for action

22. Transboundary air pollution has adverse health impacts on humans and other detrimental environmental impacts, such as tree and forest loss and the acidification of water bodies. The geographical distribution of atmospheric pollution monitoring networks is uneven, with the developing countries severely underrepresented. The lack of reliable emissions data outside Europe and North America is a major constraint to controlling transboundary air pollution. There is also insufficient information on the environmental and health effects of air pollution in other regions.

23. The 1979 Economic Commission for Europe Convention on Long-range Transboundary Air Pollution has established a regional regime in Europe and North America, based on a review process and cooperative programmes for air pollution monitoring, assessment and information exchange. These programmes need to be continued and enhanced, and their experience needs to be shared with other regions of the world.

Objectives

24. The objectives of this programme area are:

(a) To develop and apply pollution control and measurement technologies for stationary and mobile sources of air pollution and to develop alternative environmentally [safe and] sound technologies;

/...

(b) To observe and assess systematically the sources and extent of transboundary air pollution resulting from natural processes and anthropogenic activities;

(c) To strengthen the capabilities, particularly of developing countries, to measure, model and assess the fate and impacts of transboundary air pollution, through, inter alia, exchange of information and training of experts;

(d) To develop capabilities to assess and mitigate transboundary air pollution resulting from industrial [and nuclear] accidents, natural disasters and the deliberate and/or accidental destruction of natural resources;

(e) To encourage the establishment of new and the implementation of existing regional agreements for limiting transboundary air pollution;

(f) To develop strategies aiming at the reduction of emissions causing transboundary air pollution and their effects.

Activities

25. Governments [and regional economic integration organizations] at the appropriate level, with the cooperation of the relevant United Nations bodies and, as appropriate, intergovernmental and non-governmental organizations, the private sector and financial institutions, should:

(a) Establish and/or strengthen regional agreements for transboundary air pollution control and cooperate, particularly with developing countries, in the areas of systematic observations and assessment, modelling and the development and exchange of emission control technologies of mobile and stationary sources of air pollution. In this context, greater emphasis should be put on addressing the extent, causes, health and socio-economic impacts of ultraviolet radiation, acidification of the environment and photo oxidant damage to forests and other vegetation;

(b) Establish or strengthen early warning systems and response mechanisms for transboundary air pollution resulting from industrial accidents and natural disasters and the deliberate and/or accidental destruction of natural resources;

(c) Facilitate training opportunities and exchange of data, information and national and/or regional experiences;

(d) Cooperate on regional, multilateral and bilateral bases to assess transboundary air pollution, and elaborate and implement programmes identifying specific actions to reduce atmospheric emissions and to address their environmental, economic, social and other effects.

/...

Means of implementation

(a) Financial and cost-evaluation

[26. The major financial implications for programme area A (Addressing the uncertainties: improving the scientific basis for decision-making) would be for additional systematic observation and assessment of atmosphere-related issues. These are assessed in more detail in section IV, chapter 9 of Agenda 21. It is estimated that \$675 million per year will be needed in international financing for developing country programmes, as follows:

(a) Additional monitoring and assessments for these global issues in developing countries will cost on the average about \$640 million per year, all of which will need to come from international sources;

(b) The early detection system will require \$5 million annually from international sources; strengthening regional monitoring activities and international coordination of these will cost about \$30 million per year.

27. The major financial implications of programme area B (Promoting sustainable development) are as follows:

(a) During the 1990s, the total developing country energy investment requirements are expected to rise to \$120 billion per year. In order to keep the same percentage of the energy investments from international sources, at least \$4-\$4.5 billion per year will be required for the developing countries only. About \$3.5 billion are being covered from international sources at present, representing about 3-4 per cent of total investment requirements. Were this to double, annual requirements would be on the order of \$9 billion;

(b) To ensure that more efficient energy systems and renewable energy sources would be used in developing countries, thereby ensuring reduced carbon dioxide emissions, an additional sum of about \$5 billion would be required from the international community. These are issues that relate directly to climate change, as both efficiency increases and alternative fuel supplies result in lower greenhouse gas emissions. Consequently, these are issues that are at present being negotiated within the Intergovernmental Negotiating Committee on a Framework Convention for Climate Change, and any decision within Agenda 21 will need to be adjusted in accordance with the outcome of those negotiations;

(c) Finally, to ensure environmentally sound energy development, up to \$1 billion per year would be required from international sources;

(d) The approximately \$10 billion needed from the international community for implementing this programme area would be divided about equally between funds for accelerating development and those needed for global issues;

/...

(e) The national costs of promoting mass transit, as well as fuel efficiency and vehicle emission standards, are likely to be negative over time. Nevertheless, initial capital investments will be required, over and above existing plans. The magnitude of these funds will also need to be determined through the proposed regional conferences;

(f) In the area of industry, the major costs involved for developing countries will be for the development or purchase and management of new and cleaner industrial production technologies, in addition to the energy efficiency measures for industry, already covered in programme area B.1. Of particular interest is the increased cost of licensing newer, more efficient and less polluting industrial technologies. It is not possible to give an overall figure for the financial needs for these. However, since the activities to be undertaken in this area are similar to those for energy efficiency and for pollution abatement, it is possible to estimate that total requirements will be an additional \$25 billion per year, of which 3-10 per cent or \$1-\$2 billion per year could come from international sources during the 1990s. Were the percentage of international contributions to double, the requirements would be \$2-\$4 billion per year;

(g) In the area of terrestrial and marine resource development and land use, most of the activities proposed are activities that are being dealt with in other programme areas. The difference is that the objectives, and consequently the implementation, should shift in ways that take into account expected atmospheric changes. The extra cost to the international community of developing new crop varieties and agricultural practices that will be more resilient to atmospheric changes may be an additional \$100 million per year. It should be possible to absorb the additional cost for the coordination of efforts at the national and the international levels within existing budgets.

28. The annual costs to the international community for phasing out ozone-depleting substances by the year 2000 are estimated in the range of \$160-\$590 million per year. These are funds needed in addition to those already made available under the Montreal Protocol. Annual costs for the WMO Global Ozone Observing System, including the establishment of additional monitoring stations, will be less than \$1 million per year.

29. Technical assistance and pilot programmes related to transboundary air pollution efforts will cost about \$2 million annually.]

(b) Scientific and technological means

30. Developed countries should cooperate, in particular with developing countries to enable them to acquire or develop the relevant new, energy efficient and less polluting technologies, practices and policies. (Language to be supplemented following agreement on "Technology transfer, etc.").

/...

(c) Institutional means

31. Changes to existing and new institutional mechanisms of technical and financial assistance may be needed at national, regional and global levels. There is particularly urgent need for work in the areas of energy efficiency and environmentally sound energy systems, especially renewable sources.

(i) National level

32. At the national level most countries have appropriate institutions dealing with energy. Their mandates, however, need to be considerably expanded to include responsibilities for the social and environmental impacts caused by the energy systems and to fully integrate the energy needs of the rural sector. Countries need to ensure the intersectoral collaboration of agricultural, forestry and rural development authorities for the latter.

(ii) Regional and subregional level

33. Regional and subregional institutions exist in a number of areas and are undertaking regional energy-related work. Some of these are within regional economic commissions, and others are regional, intergovernmental organizations. The work of these regional and subregional bodies needs to be strengthened, and other regional energy bodies may need to be set up to ensure that all the activities of a regional character of this programme area can be undertaken by them, particularly the regional energy efficiency activities that are being proposed above.

(iii) Global level

34. In addition to strengthening existing and creating new regional institutions, a global level institutional response will also be required. There is, at present no lead agency responsible for the whole range of energy issues within the United Nations.

35. United Nations collaborating centres. Collaborating centres could be set up by relevant United Nations bodies, with existing or new governmental or non-governmental institutions, at the regional or global level, to assist countries and United Nations agencies in implementing environmentally sound energy activities.

36. Review of public financial institutions. Countries should ensure that public financial institutions at the national and international levels review their programmes to determine the extent to which they are contributing to or are promoting investments that encourage the use of environmentally [safe and] sound energy systems and thereby better serve environmental and developmental objectives.

/...

(d) Capacity-building

37. Countries, in cooperation with the relevant United Nations bodies, international donors and non-governmental organizations, should mobilize technical and financial resources and facilitate technical cooperation with developing countries to reinforce their technical, managerial, planning and administrative capacities to promote sustainable development, through energy development, efficiency, and consumption, transportation, industrial development, and terrestrial and marine resource development and land use.

(e) Human resource development

38. Education and awareness-raising programmes need to be introduced and strengthened at the local, national and international levels concerning the promotion of sustainable development through energy development, efficiency and consumption, transportation, industrial development, and terrestrial and marine resource development and land use.



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Working Group I

Agenda item 2

PROTECTION OF THE ATMOSPHERE

Text submitted by the Chairman on the basis of negotiations
held on document A/CONF.151/PC/100/Add.14

(Section II, chapter 1, of Agenda 21)

Corrigendum

GENERAL CHANGES

1. Delete the brackets around all occurrences of "new and". At the first occurrence (para. 6), include the following footnote 1/:

1/ New and renewable energy sources are: solar thermal, solar photovoltaic, wind, hydro, biomass, geothermal, ocean, animal and human power, as referred to in the reports of the Committee on the Development and Utilization of New and Renewable Sources of Energy, prepared specifically for the Conference (see A/CONF.151/PC/119 and A/AC.218/1992/5).

2. Delete all occurrences of [, and Regional Economic Integration Organizations].

SPECIFIC CHANGES

Paragraph 1

For the existing text substitute

[The drafting of the introduction will be dependent on the outcome of the negotiations of the Intergovernmental Negotiating Committee on a Framework Convention for Climate Change.]

Paragraph 3

The end of the second sentence and the beginning of the third sentence should read

for scientific, economic and social information, to reduce the remaining uncertainties in these fields. Better understanding and prediction of the various properties of the atmosphere and of the

Paragraph 5 (c)

For the existing text substitute

Ensure a more balanced geographical coverage of the Global Climate Observing System and its components, including the Global Atmosphere Watch by facilitating, inter alia, the establishment and operation of additional systematic observation stations and by contributing to the development, utilization, and accessibility of these databases;

Paragraph 6

The third sentence should read

The international community should continue to strive for economically efficient energy development paths that are increasingly safe and environmentally sound.

Paragraph 7, line 1

For energy supplies read [[safe and] environmentally sound] energy supplies

Paragraph 8 (a)

For the existing text substitute

As a long-term objective, to adopt methods and techniques which move towards less polluting and more efficient energy systems as well as an increased use of economically viable, new and renewable sources of energy, with a view to reduce any adverse effects on the atmosphere, bearing in mind the need for increasing energy consumption by developing countries;

Paragraph 8 (b)

For the existing text substitute

To promote efficient and safe and environmentally sound energy production, transmission, distribution and use;

Paragraph 8 (c)

For the existing text substitute

To promote the use of efficient, and less polluting technologies in the production and consumption of energy from fossil fuels, and other [safe,] conventional sources, which will remain important, as well as new and renewable sources of energy;

Paragraph 9 (b)

For while supporting efforts to carry out environmental impact assessments read and furthermore they should be encouraged to carry out environmental impact assessments

Paragraph 9 (d)

The subparagraph should be deleted and the remaining subparagraphs renumbered (d) to (k).

Paragraph 9 (e)

After political characteristics the text should read examining and implementing, where appropriate, measures to overcome any barriers to their development and use;

Paragraph 9 (i)

The introductory part of the subparagraph should read

[Develop sustainable energy policies and programmes to achieve appropriate structural change and to improve efficiency in the production, transmission and consumption of energy, by, inter alia:

Paragraph 9 (i) (i), line 2

After consumption add in order to improve energy efficiency and achieve appropriate structural change;

Paragraph 9 (i) (ii)

For the existing text substitute

Promoting, as appropriate, the development and application of economic and regulatory measures with a view to take into account environmental and other social costs;

Paragraph 9 (i) (iii)

For including the introduction, development and management of [new and] renewable sources of energy;] read as well as for the development, introduction and promotion of new and renewable sources of energy;

Paragraph 9 (j), line 1

For [Strengthen read [Develop and/or strengthen

Paragraph 10, lines 6 and 7

Delete all text after transport systems,

Replace , with .

Paragraph 11 (a), line 1

After promote add , as appropriate, [cost-effective]

For limit and read control and/or

Paragraph 12 (c)

For the existing text substitute Strengthen, as appropriate, their efforts at collecting, analysing and exchanging relevant information on the relation between environment and transport. Particular attention needs to be given to systematic observation of emissions and to the development of a transport database;

Paragraph 15 (c)

For the existing text substitute

Support the promotion of less polluting and more efficient technologies and processes in industries, taking into account area-specific accessible potentials for energy, particularly safe and renewable sources of energy, with a view to limiting industrial pollution;

Paragraph 15 (d)

Delete brackets

/...

Paragraph 15 (d), line 2

After environmental add and other

Paragraph 15 (e)

For the existing text substitute

[Promote efficient use of materials and resources, taking into account all aspects related to life cycles of products.]

Paragraph 18 (b)

Delete brackets

Paragraph 21 (c)

For the text after Earth's surface, substitute consider taking appropriate remedial measures in the fields of human health, agriculture and marine environment;

Paragraph 21 (d)

Delete Alternative B and the text below it

Paragraph 23, line 2

For Air Pollution has read Air Pollution and its protocols have

Paragraph 23, lines 3 and 4

For air pollution monitoring read systematic observation of air pollution

Paragraph 24 (d)

Delete brackets around and nuclear

Paragraphs 32-36

Put into brackets

Paragraph 37, lines 5-7, and paragraph 38, lines 3-5

Delete text after sustainable development

Add and the protection of the atmosphere, in all relevant sectors.

Below paragraph 38

Add the footnote contained in the first correction above